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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,888	08/04/2003	Lawrence Bernard Kool	130031-1	6541

6147 7590 02/08/2006

GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH
PATENT DOCKET RM. BLDG. K1-4A59
NISKAYUNA, NY 12309

EXAMINER	
JOLLEY, KIRSTEN	

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 02/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/633,888	KOOL ET AL.	
	Examiner	Art Unit	
	Kirsten C. Jolley	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) *1-27 and 40-44* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *28-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/4/03,12/18/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Upon further consideration of the restriction requirement made in the Office action of December 22, 2005, it is the Examiner's position that the groupings of claims should be revised. A new restriction requirement is set forth below. The Examiner telephoned Applicant's attorney, Francis Coppa, on February 6, 2006 to amend the restriction requirement and determine if Applicant would like to elect a different group. Applicant's attorney stated that the election of Group II, claims 28-39, is maintained with traverse.

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-27 and 40, drawn to a slurry coating composition, classified in class 106, subclass 14.05+.

II. Claims 28-39, drawn to a method for aluminiding a metal substrate, classified in class 427, subclass 383.1.

III. Claims 41-44, drawn to a metal surface with a slurry coating thereon, classified in class 428, subclass 650.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP

§ 806.05(h)). In the instant case the product can be used to aluminize a polymeric or ceramic substrate.

4. Inventions II and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another process, such as by coating with a slurry having aluminum-based powder with a particle size larger than 200 microns.

5. Inventions I and III are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a coating on polymeric or ceramic substrates and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

6. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

7. During a telephone conversation with Francis Coppa on February 6, 2006 a provisional election was made with traverse to prosecute the invention of Group II, claims 28-39. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-27 and 40-44 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

9. Applicant's election with traverse of Group II in the reply filed on January 9, 2006 is acknowledged. The traversal is on the ground(s) that all of the claims covered by Groups I-III are part of a single inventive concept which can be searched and examined as a single matter. Applicant additionally argues that the system of cross-referencing in the Patent Office should allow one to search one class and readily locate relevant patents which are primarily classified in a different class.

This is not found persuasive because the considerations used for examining method claims are different than those used for examining product and composition claims. Product claims and composition claims are examined based on the properties of the final article produced or on the specific composition, not on the method used to create the product or the method of using the composition (i.e., the intended use of a composition or product is not germane to the

issue of patentability of the composition or product). In addition, it is the Examiner's position that there is a burden based on the different issues that arise in examining method claims versus product or composition claims, and that the searches for the different classes of invention are not necessarily the same. When examining a claim directed to a method of coating, it is necessary to find the process steps of the coating method. However, when examining claims directed to a coated product or a coating composition, the applicable art includes art directed to Applicant's coated substrate produced by any method, or composition used in any method. For example, Applicant argues that the present invention is specifically directed to treatment of a metal substrate (not a polymeric substrate as proposed in the restriction requirement). However, the Examiner notes that the intended use of the slurry composition (on a metal substrate) is not significant in determining the patentability of the composition itself. Therefore, applicable art for a method of coating do not necessarily encompass all the fields of search required for product and composition claims and therefore there is an additional burden on the examiner.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 28-29 and 33-36 are rejected under 35 U.S.C. 102(b) as being anticipated by McMordie et al. (US 5,650,235).

McMordie et al. discloses a method for aluminiding the surface region of a metal substrate comprising: applying a slurry coating comprising colloidal silica and an aluminum-based powder (Example 5 in col. 14), and free of hexavalent chromium, and heat treating the slurry coating to remove volatile components from the coating and to cause diffusion of aluminum into the surface region of the substrate. In Example 5, the aluminum powder has a size less than 325 mesh, which falls within the claimed particle size range.

As to claim 29, McMordie et al. states that an aluminum/silicon alloy powder may be used (col. 8, lines 22-27).

As to claim 33, McMordie et al. states that the slurry coating may be applied by spraying, dipping, or brush-painting (col. 8, lines 46-49).

As to claims 34 and 36, McMordie et al. teaches that there may be a first drying step followed by a diffusion heating step (see Example 1).

As to claim 35, McMordie et al. teaches using a temperature of 885 C in Example 5.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over McMordie et al.

As to claim 37, McMordie et al. is silent with respect to the depth of the surface region of the substrate that is being treated. It would have been obvious to one having ordinary skill in the

art to have determined the optimum depth of the surface region through routine experimentation, depending upon the particular substrate material and length of time and temperature of treatment, in the absence of a showing of criticality.

14. Claims 30-32 and 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMordie et al. as applied to claims 28-29 and 33-37 above, and further in view of Baldi (US 5,102,700).

McMordie et al. is applied for the reasons discussed above.

McMordie et al. lacks the teaching of adding an organic stabilizer to its composition. Baldi is cited for its teaching of an aluminiding a metal surface using a slurry composition comprising aluminum powders and a binder such as alkali metal silicate. Baldi teaches in col. 3, lines 11-18, that adding 1 gram of polyvinylalcohol or other binder-type compounds like glycerol or ethylene glycol substantially improves the binder characteristics of the composition, and are essentially entirely driven off when heated to about 600 C without liberating serious quantities of polluting gas. It would have been obvious to one having ordinary skill in the art to have added binder-type compounds/organic stabilizer, such as glycerol, to McMordie et al.'s slurry composition upon seeing the teaching in Baldi in order to improve the binder characteristics of McMordie et al.'s slurry coating without serious side effects and because McMordie et al.'s and Baldi's slurry composition are similarly used for aluminiding metal surfaces.

McMordie et al. teaches use on nickel-based superalloy turbine engine substrates (col. 1).

As to the amount of organic stabilizer and aluminum required in claim 38, it is the Examiner's position that it would have been obvious to one having ordinary skill in the art to

have determined the optimum amount of organic stabilizer, such as glycerol, and aluminum through routine experimentation depending upon the extent of binder properties needed/desired and depending upon the amounts and specific materials used in the slurry composition, on the specific substrate used, on the desired qualities of the product, etc. in the absence of a showing of criticality.

15. Claims 28-29 and 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mor et al. (US 6,428,630).

Mor et al. discloses a method for aluminiding the surface region of a metal substrate comprising: applying a slurry coating comprising colloidal silica (col. 8, line 15) and an aluminum-based powder (col. 8, lines 52-62), and free of hexavalent chromium (col. 9, lines 35-36), and heat treating the slurry coating to remove volatile components from the coating and to cause diffusion of aluminum into the surface region of the substrate. Mor et al. states that the "particle size [of aluminum powder] is not critical to the performance of the aluminum powder as used in the disclosed invention" (col. 8, lines 54-56). It would have been obvious for one having ordinary skill in the art to have determined the optimum aluminum particle size through routine experimentation depending upon the desired results and other ingredients in the composition since Mor et al. does not provide exemplary particle sizes and states that any particle size may be used.

As to claim 29, Mor et al. states that an aluminum/silicon alloy powder may be used (col. 8, lines 57-59).

As to claim 33, Mor et al. states that the slurry coating may be applied by spraying, rolling, or brush-painting (col. 5, lines 60-62).

As to claims 34 and 36, Mor et al. teaches that there may be a first curing step (col. 9, lines 54-57), followed by a diffusion step.

As to claim 35, Mor et al. teaches using a temperature of greater than 500 C (col. 9, lines 16-21) for diffusion. It would have been obvious for one having ordinary skill in the art to have determined the optimum temperature through routine experimentation. Further, overlapping ranges are *prima facie* evidence of obviousness.

As to claim 37, Mor et al. is silent with respect to the depth of the surface region of the substrate that is being treated. It would have been obvious to one having ordinary skill in the art to have determined the optimum depth of the surface region through routine experimentation, depending upon the particular substrate material and length of time of treatment, in the absence of a showing of criticality.

16. Claims 30-32 and 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mor et al. as applied to claims 28-29 and 33-37 above, and further in view of Baldi (US 5,102,700).

Mor et al. is applied for the reasons discussed above in section 15.

Mor et al. lacks the teaching of adding an organic stabilizer to its composition. Baldi is cited for its teaching of an aluminiding a metal surface using a slurry composition comprising aluminum powders and a binder such as alkali metal silicate. It is noted that alkali silicates are similarly taught to be useful as a binder (equivalent to colloidal silica) in Mor et al.'s invention.

Baldi teaches in col. 3, lines 11-18, that adding 1 gram of polyvinylalcohol or other binder-type compounds like glycerol or ethylene glycol substantially improves the binder characteristics, and are essentially entirely driven off when heated to about 600 C without liberating serious quantities of polluting gas. It would have been obvious to one having ordinary skill in the art to have added binder-type compounds/organic stabilizer, such as glycol, to Mor et al.'s slurry composition upon seeing the teaching in Baldi in order to improve the binder characteristics of Mor et al.'s slurry coating without serious side effects and because Mor et al.'s and Baldi's slurry composition are similar and similarly used for aluminiding metal surfaces.

As to the limitation requiring use on a nickel-based superalloy substrate, it is noted that Mor et al. teaches that its substrate is first coated with a thermal spray coating, and the thermal spray coating may be a nickel-based superalloy (col. 6, lines 48-51). For the purposes of rejecting claims 38-39, the substrate in Mor et al. is considered to be a metal with a nickel superalloy thermal coating applied thereon.

As to the amount of organic stabilizer and aluminum required in claim 38, it is the Examiner's position that it would have been obvious to one having ordinary skill in the art to have determined the optimum amount of organic stabilizer, such as glycerol, and aluminum through routine experimentation depending upon the extent of binder properties needed/desired and depending upon the amounts and specific materials used in the slurry composition, on the specific substrate used, on the desired qualities of the product, etc. in the absence of a showing of criticality.

As to claim 39, Mor et al. teaches that the method of its invention is "generally applicable to any surface which will be subjected to extreme temperatures or corrosive substances" (col. 6,

lines 18-20). It would have been obvious to one having ordinary skill in the art to have performed the method of Mor et al. on a turbine component since turbine engine components are known to be subjected to extreme temperature and corrosive substances, and have aluminiding coatings thereon.

Conclusion

17. The pre-grant publication of 10/6330.,887 (US 2005/0031877) has been listed on the attached PTO-892 form.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C. Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Wednesday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kirsten C Jolley
Primary Examiner
Art Unit 1762

kcj